

CLAIM(S)

What is claimed is:

- 5 1. A process for producing a multi-coat system on a substrate comprising:
 - (a) mixing a cross-linkable component of a coating composition with a crosslinking component of said coating composition to form a pot-mix, said crosslinkable component comprising an acid functional acrylic copolymer polymerized from a monomer mixture comprising 2 weight percent to 12 weight
10 percent of carboxylic acid group containing monomer based on total weight of the acid functional acrylic copolymer, and 0.2 weight percent to 2 weight percent of amorphous silica based on total weight of the crosslinkable component;
 - (b) applying a layer of said pot-mix over said substrate;
 - (c) flashing said layer of said pot-mix into a strike-in resistant layer;
 - 15 (d) applying a layer of a clearcoat composition over said strike-in resistant layer to form a multi-layer system on said substrate; and
 - (e) curing said multi-layer system into said multi-coat system.
2. The process of claim 1 wherein a time period of said flashing step ranges from 5 to 15 minutes.
- 20 3. The process of claim 1 wherein said curing step takes place under ambient conditions, at elevated temperatures, or under ambient conditions followed by elevated temperatures.
4. The process of claim 1 or 3 elevated temperatures.
5. The process of claim 1 further comprising producing a primer coat
25 on said substrate before said step (b).
6. The process of claim 1 further comprising producing an E-coat followed by a primer coat on said substrate with before said step (b).
7. The process of claim 1 wherein said acid functional acrylic copolymer has a GPC weight average molecular weight ranging from 8,000 to
30 100,000 and a polydispersity ranging from 1.05 to 10.0.
8. The process of claim 1 wherein said acid functional acrylic copolymer has Tg ranging from -5°C to + 100°C.

9. The process of claim 1 wherein said monomer mixture comprises one or more functional (meth)acrylate monomers and one or more non-functional (meth)acrylate monomers.

5 10. The process of claim 7 wherein said monomer mixture comprises 5 percent to 40 percent based on total weight of the acid functional acrylic copolymer of said functional (meth)acrylate monomers.

10 11. The process of claim 8 wherein said functional (meth)acrylate monomer is provided with one or more crosslinkable groups selected from the group consisting of a primary hydroxyl, secondary hydroxyl and a combination thereof.

12. The process of claim 1 wherein said crosslinking component comprises a polyisocyanate, melamine or a combination thereof.

15 13. The process of claim 11 wherein a ratio of equivalents of isocyanate functionalities on said polyisocyanate per equivalents of the functional groups on said acid functional acrylic copolymer ranges from 0.5/1 to 3.0/1.

14. The process of claim 11 comprising 0.1 weight percent to 40 weight percent of said melamine, wherein said percentages are based on total weight of composition solids.

20 15. The process of claim 11 further comprising accelerating said (d) step by adding a catalytically active amount of a catalyst to said composition.

16. The process of claim 14 further comprising accelerating said (d) step by adding a catalytically active amount of an acid catalyst to said composition.

25 17. The process of claim 1 wherein said coating composition comprises pigment.

18. The process of claim 1 formulated as an automotive OEM composition.

30 19. The process of claim 1 formulated as an automotive refinish composition.

20. The process of claim 1, 17, 18 or 19 wherein said substrate is an automotive body.

21. The process of claim 1, 17, 18 or 19 wherein said composition is formulated as a low VOC coating composition comprising a solvent ranging of from 0.1 kilograms (1.0 pounds per gallon) to 0.72 kilograms (6.0 pounds per
5 gallon) per liter of said composition.